By John A. Tirpak, Editorial Director

## Bypassing the sixth generation fighter for now; Unmanned escorts; Home airspace secure, but ... ; Back to the Baltics ....

### UNLOADING THE SILVER BULLET

The Air Force is steering away from a specific "sixth generation fighter" program to ensure air superiority in the coming decades, moving instead toward a system-of-systems approach that won't depend for success on any one central element. While there probably will be a successor to the fifth generation F-22 eventually, the new aircraft, whenever it appears, won't be an all-in-one guarantor of USAF's control of the skies.

The revelations came at an AFA-sponsored Air Force breakfast in April headlined by Lt. Gen. James M. Holmes, the service's top long-range planner, and Col. Alex Grynkewich, who oversaw the yearlong Air Superiority 2030 study.

"Sixth generation" is "terminology that I'd get away from," Grynkewich said. He admitted "that's an uphill battle" as Air Force and industry leaders have tended to define future air superiority as being embodied in a fighter that's a "generational leap" beyond the F-22, much as the F-22 was a revolutionary advance over the Air Force's previous top dogfighter, the F-15.

Pursuing a specific fighter—notionally called the F-X—would have driven the Air Force toward a "20 to 30 year program" that would have been too expensive and far "too late to need," said Holmes. There isn't time for a generational leap, because adversaries are fielding increasingly lethal, layered air defenses today that will challenge even the stealthiest aircraft in the near future. The Air Force needs a system able to defeat those air defenses on a much tighter timeline.

"There is no particular 'silver bullet'" and no single platform or concept that will solve the problem, Grynkewich said. "You have to think holistically about the kill chain."

Protecting American airspace is not at issue, Holmes said. Existing aircraft and planned upgrades can handle the domestic defense mission handily. The new scheme regards being able to operate near and in highly contested enemy airspace.

"What we're trying to do is solve this problem faster … instead of waiting for that generational leap," Holmes explained. The next step will be to "identify attributes" of the various systems involved and finding "the right balance between those."

The new approach will combine air defense "rollback" techniques the Air Force already does well with some carefully selected new enablers that take advantage, for the most part, of existing or maturing technology. The new scheme will rely on standoff weapons launched from outside enemy areas of control, coupled with penetrating systems like the F-22 and next generation B-21 bomber.

The notional system will make use of large numbers of reusable drones that are cheap to make and built with an intentionally short lifetime, so "if we lose some we won't mind too much," Holmes said. The drones would serve a variety of purposes ranging from intelligence, surveillance, and reconnaissance to electronic attack to serving as decoys. Such drones could also be of a common configuration with modular payloads.

There will need to be frequent, "prioritized technology insertion" of new capabilities in existing systems, meaning there will likely be a place in the new scheme for fourth generation, or "legacy," fighters. There will be heavy dependence on space assets for communications, target identification, and a self-healing network or "combat cloud" that will link sensors and shooters throughout the battlespace.

This latter dependence drives greater emphasis on space situational awareness and the ability to defend and fight, at need, in space.

### GIMME SOME SPACE

"Air superiority depends on space superiority," Grynkewich said. "We'll rely on that space force for a long time to come, because if that space force can be responsive enough, maybe we don't have to contest through the air for some of the pieces of the kill chain."

In assessing the problem, Grynkewich said USAF looked at an all-standoff approach versus penetrating systems and found that neither did the whole job. Using an all-standoff scheme from the periphery of enemy air defenses would be cheaper, but "only in a 10-day to two-week air campaign," he said. After that, penetrating systems offer the most cost-effective way to attack targets.

Holmes noted that an all-standoff approach means backing away from USAF's core competency of being able to directly attack any target on the globe. The "sweet spot" wound up being a "hybrid" approach of both standoff and stand-in capabilities, Grynkewich said, so that if scenarios dictate not putting airmen over enemy territory, a robust standoff capability exists.

For the penetrating elements, though, USAF must overcome the classic shortcomings of fighters: short range and small payload being chief among them. New systems will have to "be able to operate from range," carry a lot of weapons (or be able to target munitions from offboard platforms), and be survivable, Grynkewich said. They will be battle network sensor nodes, building the overall picture of the fight from behind enemy lines.

For the future air superiority role, Grynkewich said "speed and agility" will "still have value" in the battlespace.

"Arsenal planes" will be part of the trade studies as to what makes it into the new air superiority complex, Grynkewich said. Large arsenal airplanes, able to dispense a wide variety of munitions, would most likely "not be very survivable" and would have to operate at the periphery of defended airspace, launching at standoff range. However, stand-in arsenal airplanes in the form of stealthy escorts for F-22s and F-35s would probably be needed for the offensive counterair mission, he explained. An F-22 pilot, for example, would be able to designate targets

for all the munitions carried by an unmanned escort aircraft before using his own jet's weapons, increasing the effectiveness of each sortie behind enemy lines.

## HOLISTIC LEAP

The future air superiority construct will embrace "third offset" technologies such as autonomous unmanned systems and technology to help the humans involved make the right decisions faster. Holmes noted that while the Air Superiority 2030 study focused on concepts, the Air Force Research Laboratory has been working on technologies that would be part of the scheme, and he noted hypersonics, directed energy, and autonomy as among the leading candidates to help deliver the speed and firepower necessary for the plan to work.

The "wildly aspirational" goal of getting the new air superiority construct in place is 2025, Holmes said. Achieving that rather aggressive objective would require a lot of things to go right.

First, the "experimentation and prototyping campaign" of the next few years, which will try out both new technologies and operational concepts, will have to yield some advances.

Next, there would have to be approval both from the senior Air Force leadership as well as that of the Pentagon.

And if all that goes well, there would have to be some success in streamlining and accelerating the Pentagon's sluggish acquisition system to get systems developed and fielded. Grynkewich said a formal plan will be jelled by "the end of May" and make its way later this year into "Planning Choices," USAF's preliminary draft of the 2019 Program Objective Memoranda.

The date 2025 falls right in the window of the Air Force's so-called "bow wave" of buying and developing new systems. Between 2023 and 2025, the service wants to begin operating the new T-X trainer, a new platform for the JSTARS system, and the first examples of the B-21 bomber, all of which coincide with peak production on the F-35 fighter and KC-46 tanker.

Holmes said money was set aside from the Fiscal 2016 budget "in anticipation" of Air Superiority 2030's findings, so "we have money for experimentation laid in" to begin prototyping and experimentation efforts "right away."

The Air Superiority 2030 study laid the foundation for a number of analyses of alternatives that will be done in the next few years. "It had to go first," Holmes said in response to a question. Now that the scheme is set, other enterprises—notably how the Air Force will prosecute the electronic warfare battle and other aspects of combat power—will get their own yearlong examinations.

## THE VIEW FROM RAMSTEIN

Russia has built a robust, "layered" air defense system "from the Baltics to the Black Sea, and now the Mediterranean," and this in part drives the need to deploy F-22 Raptors to the European theater more frequently. So said US Air Forces in Europe and Air Forces Africa chief Gen. Frank Gorenc during a recent visit to Washington.

Last year's "Rapid Raptor" deployment of four F-22s to a number of USAFE-AFAFRICA bases, including a stop in Poland, might be construed as a "logical first step" in basing fifth generation fighters on the continent, he said. The deployment was "the beginning of the process" of such a move, shaking out how F-22s, which need "extensive" low observable maintenance, could deploy in small numbers to a number of relatively austere airfields.

USAF photo by A1C Erin R. Babis

***"Rapid Raptor" scenarios in Europe are purely defensive.***

The exercise was the start of introducing fifth generation fighter capabilities to NATO, some members of which—non-US—will soon have F-35s. It is necessary for the Alliance to begin exercising with this new capability. The F-35's stealth and sensor attributes, along with the fact that many partners will field almost identical jets, will provide an almost "exponential" increase in NATO airpower and interoperability, Gorenc asserted.

Gorenc doesn't see the deployment of F-22s as provocative or destabilizing. The F-15Cs based at Lakenheath, UK—and which have been extended there, thanks to European Reassurance Initiative money in the Fiscal 2017 budget—are "purely" defensive, and a more frequent presence of F-22s should be construed in the same way.

"Wanting to defend your sovereign airspace couldn't be more de-escalatory," Gorenc said, adding that he has no way of measuring whether either the ERI or the deployment of F-22s had succeeded in "deterring" Russia from more aggressive action.

To "complicate" an adversary's problems in the event of war, Gorenc said he's moving to "explore" more deployments of small groups of aircraft to bases around Europe. He described a scenario in which a flight of aircraft could land at an austere location, refuel and rearm, take off, fly a combat mission, and recover in yet a third location.

The concept is called "Rapid X" and involves positioning support equipment and maintainers at such fields before the aircraft land, then whisking them off to other locations. These airfields don't have "the full infrastructure" of a NATO base, but the agility of being able to operate from many unexpected locations would be a force multiplier, he said. It makes "the adversary's problem that much harder."

While he's "satisfied" with USAFE-AFAFRICA's formal basing structure—even though it was set before Russia's adventurism in the Crimea—Gorenc is hoping to frequent more bases "to the south and east," naming Poland, Romania, and Bulgaria as prospective hosts. He also forecast that NATO will have to look more to airfields in the "High North" of Europe.

Climate change is making the Arctic Ocean increasingly navigable, and the increased naval traffic is becoming a "concern" to NATO members and allies in that region, Gorenc reported. ✪